Pre Calc Review
Section 4.5 - 4.7
Answer Key

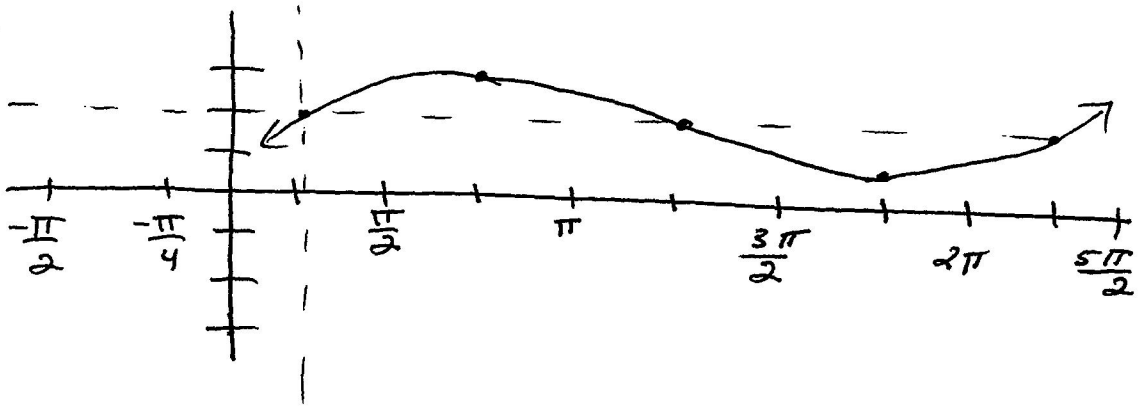
① $y = \sin\left(x - \frac{\pi}{4}\right) + 2$

Period: 2π

Amp: 1

P.S.: R $\frac{\pi}{4}$

V.S.: D 1



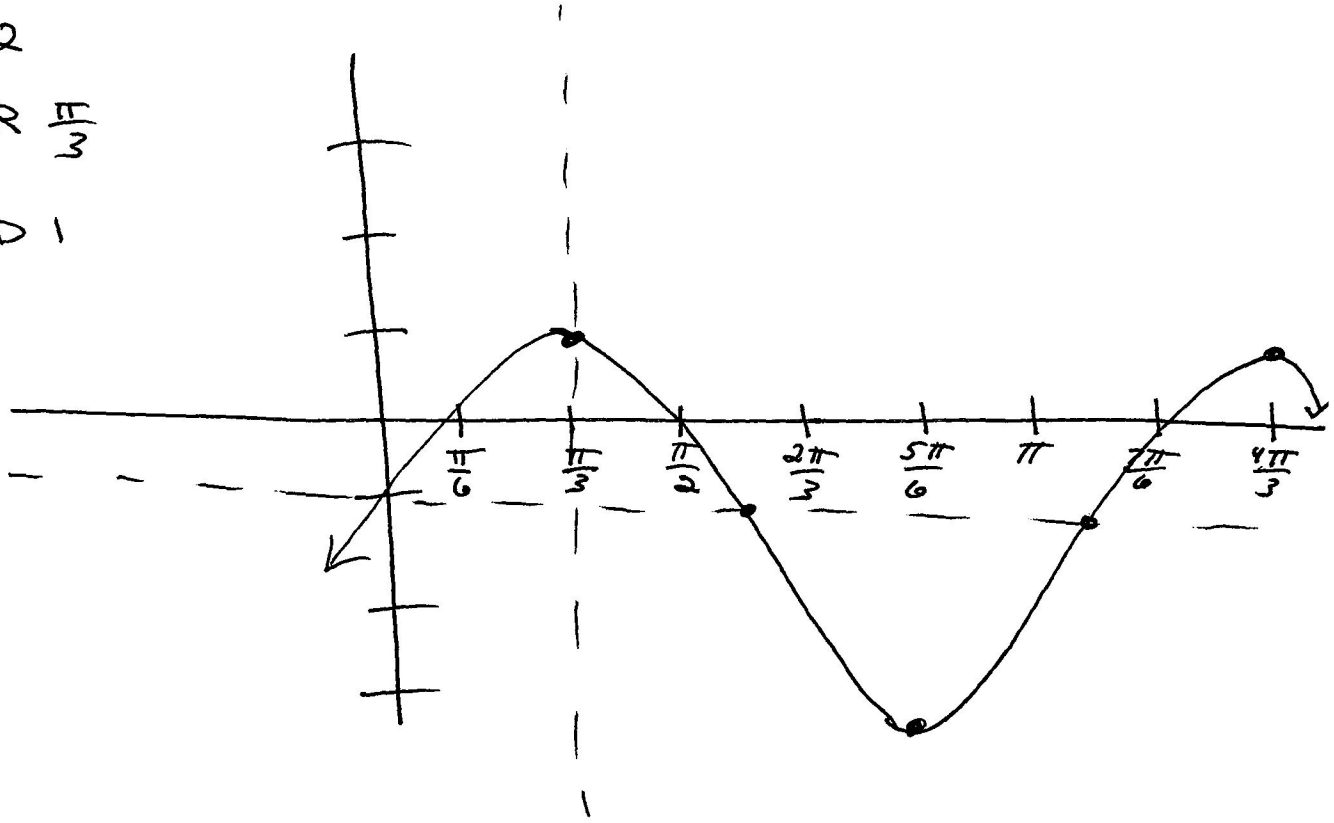
② $y = 2\cos 2\left(x - \frac{\pi}{3}\right) - 1$

Period: $\frac{2\pi}{2} = \pi$

Amp: 2

P.S.: R $\frac{\pi}{3}$

V.S.: D 1

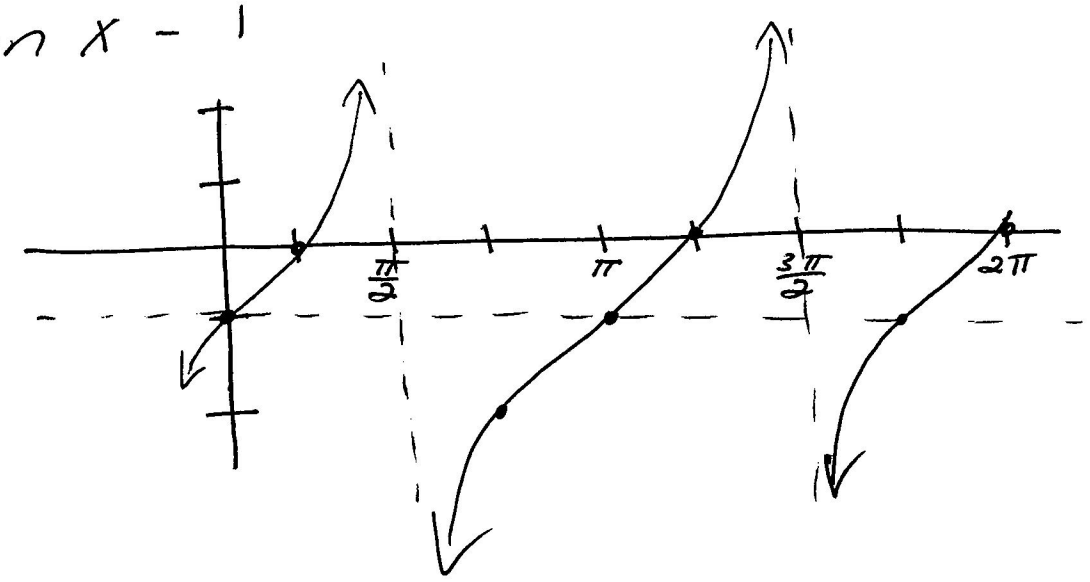


③ $y = \tan x - 1$

Period : π

Amp : 1

V. Shift : D 1



④ $y = 2\tan\left(2x - \frac{\pi}{2}\right) + 2$

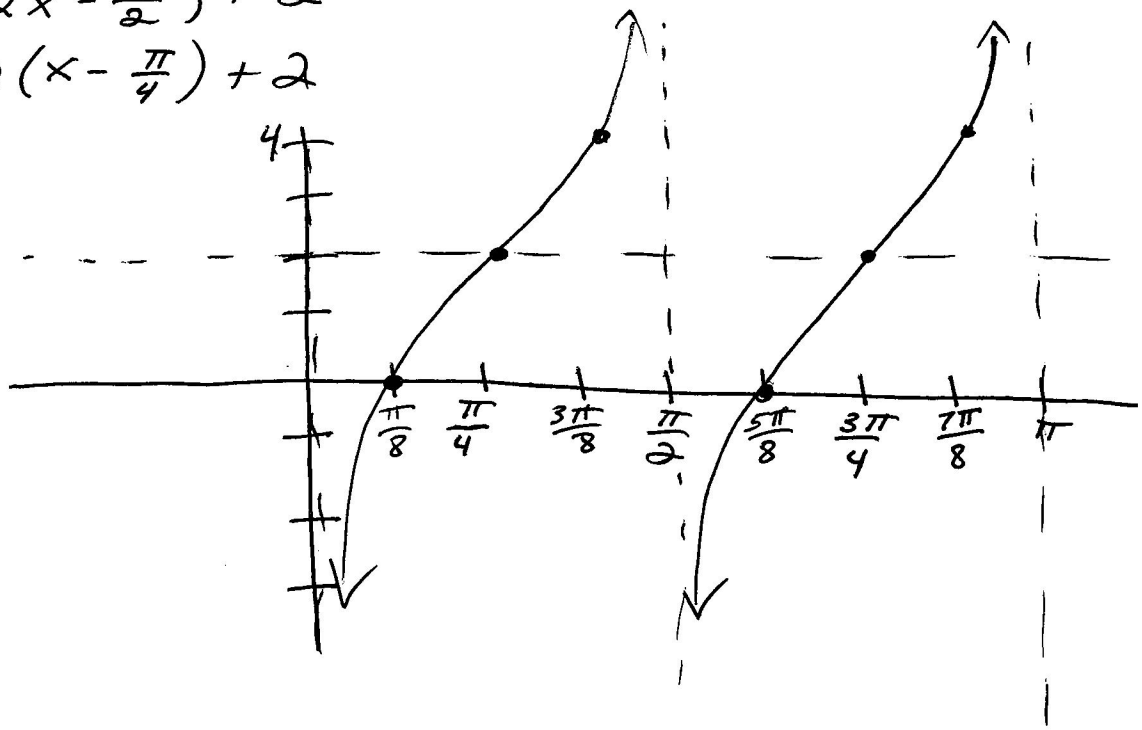
$y = 2\tan 2\left(x - \frac{\pi}{4}\right) + 2$

Per : $\frac{\pi}{2}$

vert st : 2

V shift : up 2

P.S. : R $\frac{\pi}{4}$



⑤ $y = -3 \sin \frac{3}{2}\left(x + \frac{\pi}{2}\right) - 1$

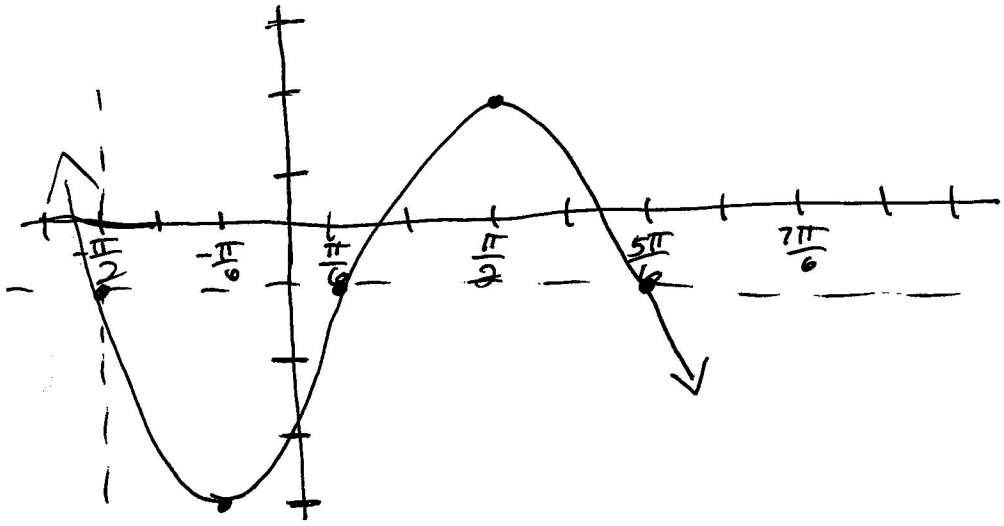
* Period: $\frac{2\pi}{\frac{3}{2}} = 2\pi \cdot \frac{2}{3} = \frac{4\pi}{3}$

Amp: 3

* P shift: L $\frac{\pi}{2}$

Vert shift: D 1

→ * common denom of 6



⑥ $y = \cos(3x - \pi) - 1$

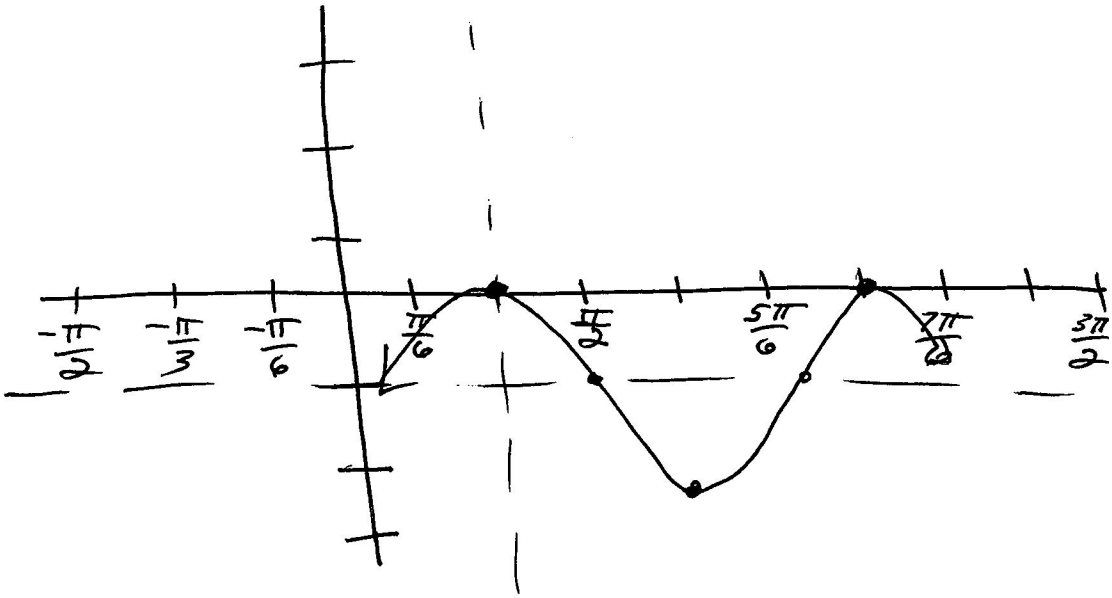
$y = \cos 3\left(x - \frac{\pi}{3}\right) - 1$

Period: $\frac{2\pi}{3}$

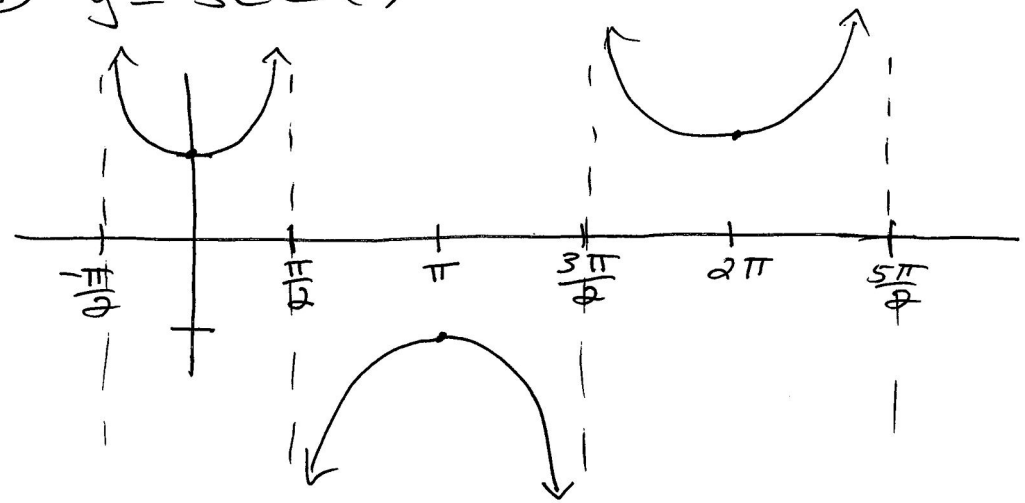
Amp: 1

P Shift: R $\frac{\pi}{3}$

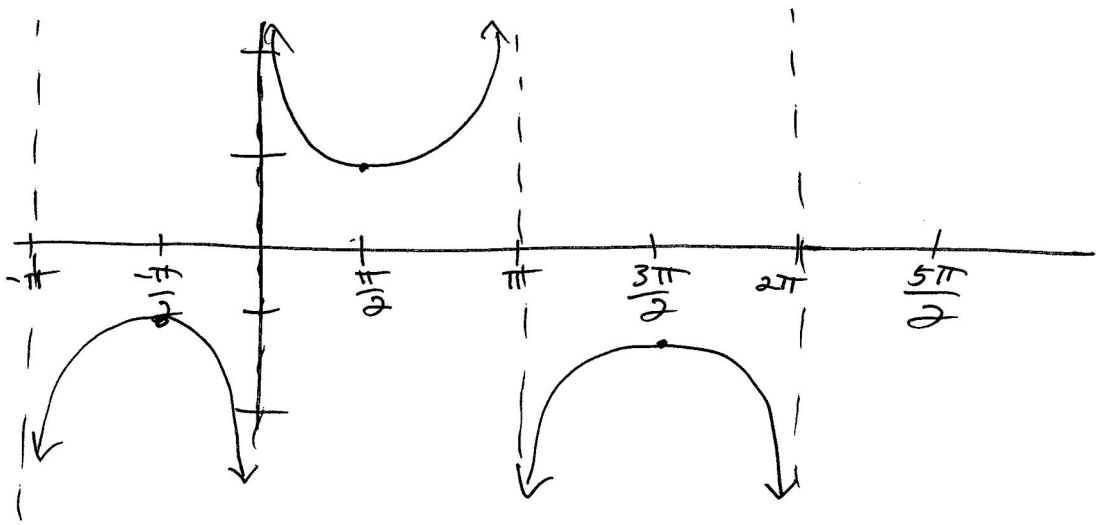
V Shift: D 1



⑦ $y = \sec(x)$



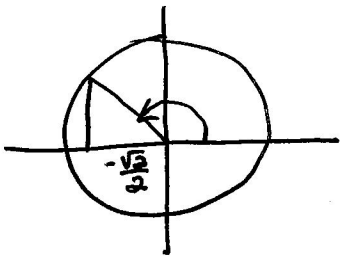
⑧ $y = \csc(x)$



(9) $\arcsin\left(\frac{\pi}{3}\right)$ No real solution

Since $\frac{\pi}{3} > 1$

(10) $\cos^{-1}\left(-\frac{\sqrt{2}}{2}\right)$



ref ang = 45° so $\theta = 135°$

or

$\theta = \frac{3\pi}{4}$

(11) $\sin^{-1}\left[\sin\left(\frac{\pi}{3}\right)\right] = \boxed{\frac{\pi}{3}}$

(12) $\cos\left[\arccos\left(\frac{5\pi}{3}\right)\right]$ = undefined

* $\frac{5\pi}{3}$ is greater than 1

(13) $\tan\left[\arcsin\left(\frac{12}{13}\right)\right]$ let $u = \arcsin\frac{12}{13}$

$u = \arcsin\frac{12}{13}$

$\sin u = \frac{12}{13}$

$y = 12$

$x = 5$

$r = 13$

* x is positive because the terminal side must fall between -90° and 90° so it is in QI

$\tan u = \boxed{\frac{12}{5}}$

(14) $\sin\left[\arccos\left(-\frac{3}{7}\right)\right]$

$u = \arccos -\frac{3}{7}$

$\cos u = -\frac{3}{7}$

$x = -3$

$y = 2\sqrt{10}$

$r = 7$

$x^2 + y^2 = r^2$

$(-3)^2 + y^2 = 7^2$

$9 + y^2 = 49$

$y^2 = 40$

$y = \pm 2\sqrt{10}$

$\sin u = \boxed{\frac{2\sqrt{10}}{7}}$

(15) $y = 2 \sin 2x - 3$

To find b:

$\frac{2\pi}{b} = \pi$

$2\pi = \pi b$

$\boxed{b = 2}$

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(16) $y = \cos 8(x + \pi)$

To find b: $\frac{2\pi}{b} = \frac{\pi}{4}$

$\left(\frac{4}{\pi}\right) 2\pi = \frac{\pi}{4} b \left(\frac{4}{\pi}\right)$

$\boxed{8 = b}$

(17) $y = 3\tan\frac{1}{2}\left(x - \frac{2\pi}{3}\right)$

To find b: $\frac{\pi}{b} = 2\pi$

$\pi = 2\pi b$

$\boxed{b = \frac{1}{2}}$

(18) $y = -4\sin 3\left(x - \frac{\pi}{4}\right) + 3$

To find b: $\frac{2\pi}{b} = \frac{2\pi}{3}$

$2\pi = \frac{2\pi}{3} b$

$\boxed{b = 3}$

(19) $y = 2\tan\frac{2}{3}x + 1$

To find b:

$\frac{\pi}{b} = \frac{3\pi}{2}$

$\pi = \frac{3\pi}{2} b$

$\boxed{b = \frac{2}{3}}$

(20) $y = -2\cos\frac{3}{5}x$

To find b: $\frac{2\pi}{b} = \frac{10\pi}{3}$

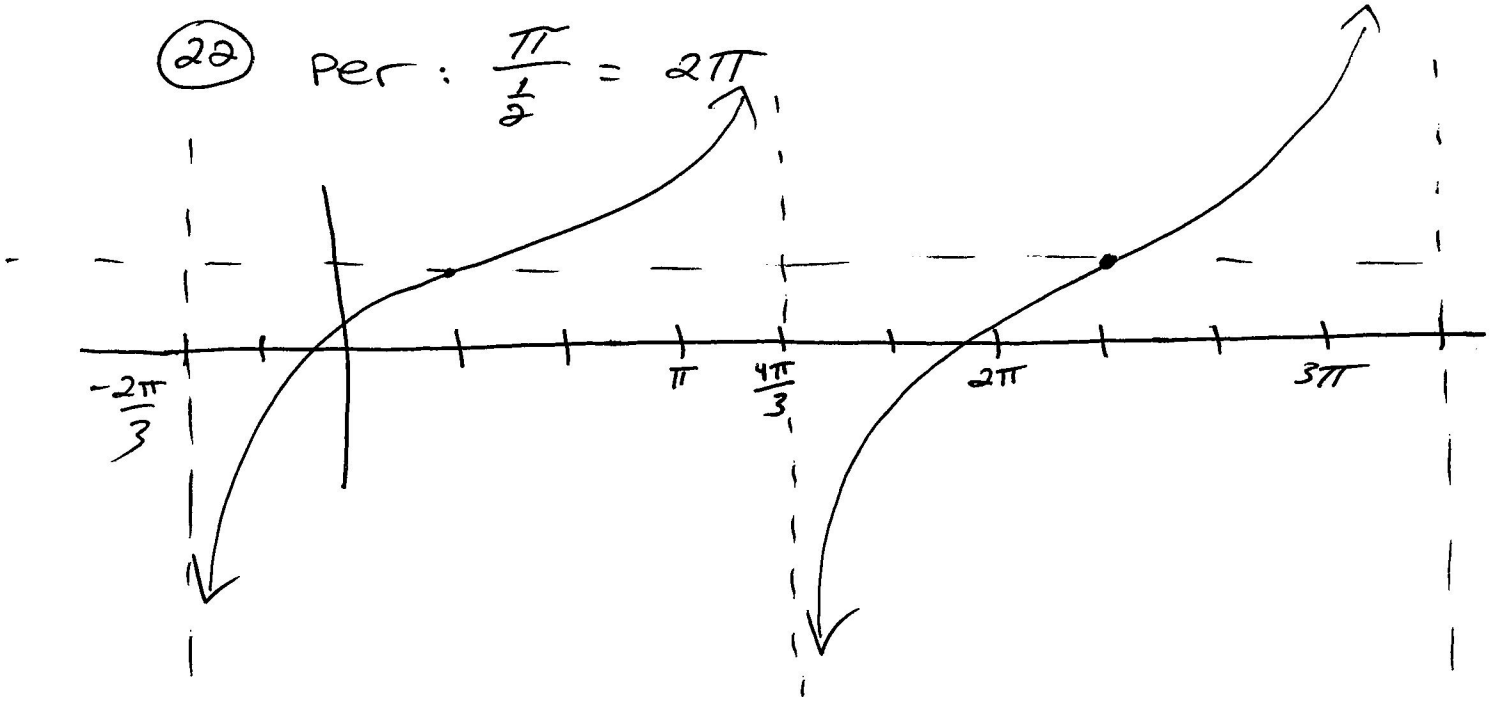
$2\pi = \frac{10\pi}{3} b$

$\boxed{b = \frac{3}{5}}$

(21) $\sec\theta$ is undefined at $\frac{\pi}{2}$ and every π units after that

so: $D: \left\{ \mathbb{R} \mid x \neq \frac{\pi}{2} + k\pi \right\}$

(22) Per: $\frac{\pi}{\frac{1}{2}} = 2\pi$



$D: \left\{ \mathbb{R} \mid x \neq \frac{4\pi}{3} + 2k\pi \right\}$